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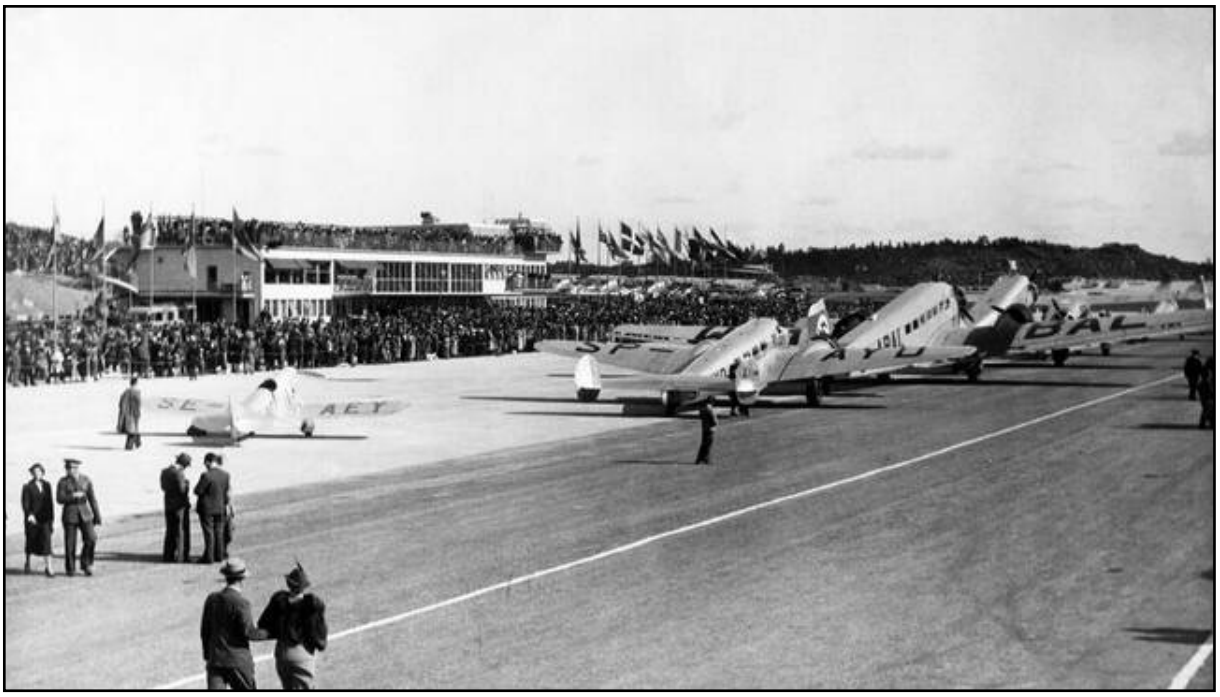

The BOAC Leuchars-Bromma Service 1939-1945

By Matthew Knowles

TAKEAWAYS

- **BOAC's Scandinavian Service (1939-45), which operated between the UK and neutral Sweden, provided the means by which a large number of Allied clandestine operations and activities could be carried out during the Second World War.**
- **Moreover, its transport of thousands of tons of Swedish-manufactured steel ball-bearings to Britain during the same period, was vital for its aircraft manufacturing industry.**

On 24 August 1939, the United Kingdom government, in conjunction with its newly established and publically-owned airline, the British Overseas Airways Corporation (BOAC), established a regular scheduled weekly passenger and freight air service between Croydon aerodrome near London and the four Nordic capitals with the Norwegian coastal city of Stavanger; it would be known as the Scandinavian service.

The service continued to operate, somewhat intermittently, after the Second World began until February 1941, from which time the service was greatly expanded from a new base at Leuchars on the east coast of Scotland, with its remit including the carriage of vital industrial supplies for British war industries, Allied resistance and intelligence operatives, as well as much diplomatic mail, often used as cover for secret documents and material as well as for the transport of Norwegian refugees to Britain, many of whom would then join the Norwegian Armed Forces in Exile.

The Scandinavian service became increasingly significant for the Allies and particularly so for Britain, Norway and neutral Sweden over the course of the war. During the period September 1939 to April 1940, Britain main-

taining strong diplomatic ties and communications between London and the Nordic governments was seen as vital, not least as a counterweight against increasing pressure and influence from both Nazi Germany and the Soviet Union on those governments. Intelligence also inevitably became an ever more important factor as European diplomacy largely failed and Denmark and Norway were occupied. The service had ceased to operate to Helsinki with the onset of the Soviet-Finnish War in November 1939 thus, by April 1940, Stockholm became the only destination to which the service operated with the city then becoming a major hub for intelligence gathering as well as diplomacy for the Allies.

Sweden's proximity to Germany and its continuing official neutrality made its capital an important base from which the Allies could monitor developments and receive information from northern Europe on Wehrmacht movements and weapons development. From 1939, weapons intelligence had become a major part of BOAC's transport remit, with Norwegian, Danish, Polish, German and Austrian agents all providing information and material which was flown to Britain for swift analysis by MI6. This included much information on V-2 rocket development as well as nuclear weapons projects. In early 1943, the Norwegian SOE team which had successfully halted the production of deuterium (or "heavy water", required for Hitler's atomic weapons programme) at a Nazi-controlled factory in Norway had returned to Britain via BOAC after escaping into Sweden; they were thus able to quickly brief MI6 on their success and the operational status of the factory. Furthermore, in October 1943, BOAC acted as an emergency airlift to evacuate the Danish nuclear physicist, Nils Bohr to Britain after the Danish resistance had smuggled him to Sweden. Bohr was about to be arrested by the Gestapo in Copenhagen and, it was assumed, would then be forced to work on the Nazi atomic weapons programme. Instead he became a major contributor to the Manhattan Project.

In July 1944, BOAC also operated multiple flights to and from Sweden, carrying agents and material related to a captured V-2 rocket, which had crashed in southern Sweden. The information gleaned from this by MI6 in Britain enabled much earlier mitigating offensive and civil defence action against the missiles than would otherwise have been possible, undoubtedly saving many thousands of civilian lives and probably preventing serious disruption to ongoing Allied military operations in France and the Low Countries.

From 1942, the British aircraft manufacturing industry began experiencing a chronic shortage of steel bearings and ball-bearings – vital components for all aircraft as well as most other mechanical vehicles. Domestic production was already at full capacity and despite intermittent attempts, merchant shipping could not provide the quantity needed from overseas, either from Sweden or other sources. Consequently, the Air Ministry decided that much of the Scandinavian service should be given over to priority transport of these products, including aboard Norwegian-owned BOAC aircraft for which cargo capacity charges were paid by the British government to their Norwegian counterparts. The crisis had been largely alleviated by late 1943, thanks to the BOAC service.

Throughout the war, at least 50,000 Norwegian refugees reached Sweden, most of them initially being billeted in and around Stockholm. This situation became significant from a humanitarian as well as a diplomatic point of view. The Swedish Red Cross and government agencies became increasingly stretched in caring for the refugees and pressure was put upon the Air Ministry and Foreign Office in London by both Stockholm and the Norwegian government to transport more refugees to Britain, where many wished to join the Norwegian armed forces.

After much argument and considerable anger from the Norwegians (the government and the refugees themselves), increased capacity was allowed, with the Norwegian arm of the service taking the bulk of this responsibility. Furthermore, British and Norwegian BOAC-carried humanitarian cargoes (including food, clothing and medical supplies) were sent to support this community. Only around one thousand civilians were evacuated to Britain by BOAC, however this figure may be somewhat misleading due to the larger number of Norwegian service personnel who used the Scandinavian service, having at one time been civilian refugees.

Information and propaganda from Allied countries was also carried on the service, including recorded speeches by Norwegian and other Allied government members, heads of state and other public figures. Newspapers, books, educational materials, Hollywood and UK films and even an occasional film star were couriered to Stockholm.

By 1944, the service had thus acquired a wide remit with a broad span of responsibilities, all of which assisted the Allied cause, with the carriage of intelligence material and personnel, along with steel bearings having the greatest importance of these duties to the Allies' prosecution of the war.

The role played by BOAC's Scandinavian service has been greatly under-represented in scholarly literature since 1945. A number of short public information texts were produced by HMSO from 1946 to '50, which gave outlines of the service and its responsibilities.[1] However, these provided only basic information material, without assessment of the significance of the service.[2] The lack of detail may be attributed to the legal restrictions on access to documents relating to the service at the time. Many of the wartime service's files were not opened to the public until 1984.

There are a very small number of recent books on the subject and only a modest-sized body of work which covers some aspects of the Scandinavian service, primarily through general histories of air travel, BOAC and specific aircraft manufacturers and marques. In the last twenty-five years only two books have dealt with the BOAC Scandinavian service specifically; Nils Mathisrud's recent work[3] is one and Nilsson and Sandberg's another[4]. However, there remain areas which merit further building upon both of these excellent accounts, particularly the intelligence background and the wider impact the flights had in this respect, as well as that of the ball-bearing transports.

This article seeks to explain the significance of the British Overseas Airways Corporation's wartime Scandinavian service within the broad context of UK-Norwegian relations, the Allied cause and the position of neutral Sweden, from 1939 to 1945. It will discuss and analyse the background to the development of the service and some of the most significant contributions to the Allied war effort the service provided in terms of intelligence, industrial materials and diplomacy.

Origins and Beginnings

The potential of air power for military uses became increasingly apparent during the First World War. Furthermore, to a limited extent, potential civilian and commercial uses for aircraft, particularly for transport purposes had also become clearer. By 1918, aeronautical technology had reached a stage where passenger flights across the North Sea were viable from a safety point of view; thus, by 1919 the first attempts were being made to prove their commercial viability. After a somewhat faltering start on both sides of the North Sea, by the mid-1920s, commercial air travel for both passengers and cargo was common, both domestically and internationally, although it would be the early 1930's before regular, scheduled passenger flights between the UK and Scandinavia began and a further decade before the importance of civilian air services in wartime would also prove able to provide great advantages to governments and their intelligence services.

Air passenger services, combined with cargo and mail flights, were operated intermittently between Britain and Scandinavia from the late 1920s by various couriers, including the Swedish national carrier, Aktiebolaget Aerotransport (ABA)[5] and British Airways Ltd (BAL)[6], the forerunner of the British Overseas Airways Corporation (BOAC), from February 1936.[7] The Norwegian airline, Det Norske

1 Merchant Airmen (account according to Air Ministry & produced by Ministry of Information, UK), (London: HMSO, 1946)

2 Laboratories of the Sky (produced by Ministry of Information, UK), (London: HMSO, 1948)

3 Nils Mathisrud, *The Stockholm Run*, (Sandomierz (Poland): 2016)

4 Lars-Axel Nilsen and Leif A. Sandberg, *Blockade Runners: Sweden's Lifeline in the Second World War*, (Orebro (Sweden): Gulles Forlag, 1994)

5 Brower V. York (Ed.), "Article No.7", *Aeronautical World News*; Issue 216, Vol. V; Washington, D.C.: U. S. Department of Commerce , Bureau of Foreign and Domestic Commerce, 1930) pp.244-7

6 United Kingdom parliamentary debate, (London: Hansard/HMSO, London, 9 December 1936): https://api.parliament.uk/historic-hansard/commons/1936/dec/09/scandinavian-service (accessed 23 April 2021)

7 Treasury Solicitor and H.M. Procurator General, Treasury Solicitor's Department, *List & Index Society*, (Kew, London:

The British Embassy, Stockholm (1939-67)

The building became a wartime hive of Allied intelligence activity and resistance planning with operations reaching across Scandinavia and Germany. BOAC provided an important air-link from the embassy (via nearby Bromma airport) with MI6 and SOE headquarters in Britain.

Luftfartselskap (DNL) began negotiations with BAL for a jointly run regular passenger service between Oslo and London in 1938, however no agreement was reached[8] and the following year BAL negotiated a concession directly with the Norwegian government.[9]

The other major British international courier, Imperial Airways Ltd (IAL), amalgamated with BAL in 1939 to form the British Overseas Airways Corporation (BOAC). The new corporation was brought under government and Air Ministry control upon the outbreak of war,[10] along with all other British civilian air transport, with all flights to Scandinavia suspended.[11] However the service was then reconvened on 30 November, with its home station having been moved from Heston-Croydon aerodrome to Newlands airfield at Scone, near Perth in Scotland, far distant from south-east England, which was expected to become a zone of major aerial combat. [12]

The British and the four Nordic governments wished to see the service continue to whatever extent was viable after the war had begun.[13] The Scandinavian governments and Finland had all stated jointly their neutrality in the European war on 2 September[14], but all also saw the advantages of continuing civilian

Royal Historical Society, 1979), p.318

8 Johan Nerdrum, *Fugl fønix: En beretning om Det Norske Luftfartselskap* (transl. from Norwegian): *The Phoenix Bird: An Account of Det Norske Luftfartselskap* (Oslo: Gyldendal Norsk Forlag, 1986), pp.105-110

9 Robin Higham, *Britain's Imperial Air Routes 1918-1939*, (Yeovil (UK): G T Foulis & Co Ltd, 1960), p.1,766

10 "Statement of Guarantee Given by the Treasury on 24th January, 1947, in Pursuance of Section 16 (1) of the British Overseas Airways Act, 1939 and Civil Aviation Act, 1946, on Loans Raised by the British Overseas Airways Corporation…"; Ordered by the House of Commons (to be Printed 29th January 1947) Report "British Overseas Airways Act, 1939 and Civil Aviation Act, 1946, (London (UK): Treasury of HM Government (UK), 1947)

11 J. Paul Hodgson, *Britain's Glorious Aircraft Industry: 100 Years of Success, Setback and Change*, (Barnsley: Pen & Sword, 2021), p.65

12 Jan Forsgren, *The Junkers Ju52 Story* (Stroud (UK): Fonthill Media, 2016), p.67

13 Roy Reginald Roadcap (Ed.), Untitled short report, (no author stated), *World Airline Record*, (Chicago, Il: R. R. Roadcap, 1972), p.297

14 Earl F. Ziemke, *Command Decisions*, Vol. II: *The German Decision to Invade Norway and Denmark*, (Washington, D.C.: Center of Military History, United States Army, U.S. Department of Defense, 1990), p.50

air services with both Britain and Germany, primarily for diplomatic and trade purposes, whilst the British government's initial and primary motivation was the intelligence value of an ongoing civil air service between the UK and the Nordic capital cities, particularly in view of the anticipated disruption to marine traffic. The North Sea had become a greatly hazardous route for all forms of shipping for both belligerent and neutral powers from the very beginning of the war due, in particular, to the presence and abilities of submarines; an air conduit was a way to mitigate this problem.

During the winter of 1939-40, BOAC's Scandinavian service operated five medium-sized passenger aircraft: a Lockheed Electra 10, a Lockheed Super Electra 14[15], and three Junkers 52's.[16] The service, which used what was termed "Route 730", was meant to take in all the Nordic capitals as well as the strategically important coastal city of Stavanger, [17]on the south-west coast of Norway, although this was not always the case because of weather-related dangers and security concerns relating to nearby military activity. However, the British legations in both Oslo and Stockholm in particular, continued to build up their espionage activities, sending agents and material back and forth to Britain in increasing volume.

By early 1940, MI6's growing presence in Stockholm allowed for the development of a control station for an extensive Allied intelligence network across northern Europe, as a result of which, German military and industrial activity could be increasingly closely monitored.[18] Furthermore, the Swedish iron ore and steel industries were of vital importance to both the Allies and Axis war industries, and would become more so as the war progressed and trade arrangements with other countries were cut off as a result of military action. Although transport of air cargoes of finished steel goods would not begin in earnest until 1942, both the British and the Swedes saw the opportunity for trade delegations, commercial mail and technical samples to be carried between Britain and Sweden in the same way as had been conducted between Sweden and Germany from the late 1920s.

Despite resuming in late November 1939, the 730 service was again interrupted by the Soviet attack on Finland on 30th, during which, a BOAC aircraft approaching the Finnish coast was ordered to return to Bromma-Stockholm after being informed that Helsingfors (Helsinki) Airport [19]was being attacked by Soviet aircraft. However, services continued to operate to the other Nordic capitals until the invasions of Denmark and Norway on 9 April 1940[20], despite the evident dangers and the seeming imminence of war spreading through the entire region. This demonstrates the importance of the service to its facilitators, despite its small scale. By this time the service had already become of great importance to Britain's Secret Intelligence Services (SIS), which had first received clear intelligence about developments in the Nazi rocket programme in early November '39, via a German scientist working for the Allies in Oslo, Dr Hans Ferdinand Mayer.[21]

A third interruption to BOAC's Scandinavian service began on 9 April when Denmark and Norway were first attacked by Nazi Germany. All flights were immediately suspended, leaving one aircraft stranded in Oslo. The following day BOAC lost this aircraft, a Junkers, named 'Jason', whilst it was parked at Fornebu aerodrome as German troops overran the area[22]; yet Norwegian defences held long enough for the crew and most of the dozen BOAC ground staff in Oslo to escape into Sweden, with the help of Norwegian civilians. One of the escapees was the 'Jason's' pilot, Captain Gilbert Rae, who would become one of BOAC's most successful pilots on the Leuchars-Stockholm route from when this was established in 1941.[23]

A similar situation to that at Fornebu occurred at Sola aerodrome near Stavanger; although no BOAC aircraft were present, the company staff fled the site; most escaping by

15 Joan Bradbrooke (Ed.), feature article (no author stated), *Journal of the Royal Aeronautical Society* (London: Royal Aeronautical Society, 1966, p.264
16 Bradbrooke (Ed.), p.264
17 Forsgren, p.67
18 Nigel West, *MI6: British Secret Intelligence Service Operations, 1909-45*, (New York: Random House, 1983), p.122
19 Forsgren, p.68
20 Kenneth Hudson & Julian Pettifer, *Diamonds in the Sky: A Social History of Air Travel*, (London: The Bodley Head Ltd, 1979), p.115
21 Anthony Cave Brown, *"C": The Rise and Fall of Sir Stewart Graham Menzies*, (London: Macmillan, 1988), p.523
22 Produced by Ministry of Information (UK), *Miscellaneous Publications*, Vol. VII, (London: HMSO, 1945), p.191
23 Ibid.

boat to England, whilst several others, as well as the British consul to Stavanger, reached Sweden with the help of Norwegian civilians and the military.[24] The company's remaining estate in Norway was then taken over, primarily by the Wehrmacht but with some assets coming under the jurisdiction of the German national civilian airline, Deutsche Luft Hansa (DLH). The fact that a number of BOAC staff based in Norway had reached Sweden made it considerably easier for the company's operations at Bromma to be expanded the following year.

BOAC had perennial problems with retaining and recruiting both aircrew and ground staff of all types throughout the war, much due to the demands of the military air services.[25] This situation would be improved to some extent by the growing number of Norwegians recruited to the service from 1940, although a large number of Norwegian civil airline employees were coerced into working for the German military administration in Norway, not least in order to prevent them leaving the country and thus using their abilities to assist the Allies. Furthermore, unlike its British opposite number, the German national carrier, DLH did not encounter serious staff shortages, with the German civil aviation industry and air links to surrounding countries having already been well-established by the late 1920s.

DLH had run regular joint-passenger and air services between Berlin and Sweden from its foundation in 1926, using primarily Bulltofta airport near the city of Malmö in southern Sweden.[26] From 1928, fast trains would then take passengers to the Swedish capital[27], some four hundred miles to the north. Lindarängе marine airport served as Stockholm's air station from 1919 and began international commercial flight services in 1924;[28] yet by the mid-1930s it no longer had the capacity or facilities to meet the growing demand for air travel. However, the establishment of a new airport at Bromma in 1936 on the outskirts of Stockholm, with a modern concrete runway and situated only five miles from the city centre, created the opportunity to get German and Swedish personnel, as well as goods and mail in and out of the country more quickly and efficiently[29], as well as with lesser chance of identification or interception by foreign agents enroute than had previously been the case.

DLH moved their Swedish regional headquarters from Malmö to Bromma on 17 April 1939[30], continuing to run services between Berlin and the new Swedish airport[31], despite the onset of war. The fact that BOAC did the same, then provided a counterweight to the intelligence, diplomatic and economic purposes of the Berlin-Stockholm service.

Despite maintaining a skeleton service throughout 1940, BOAC found it difficult to re-establish regular flights to Sweden until early 1941. The company's two remaining Junkers 52 aircraft were permanently withdrawn from Route 730 and transferred to the RAF for training use in April 1940. Their continued deployment was considered too likely to cause a "friendly fire" incident as a result of being German-designed and in light of the changing situation in Scandinavia and increasing air activity by the Luftwaffe over Britain.[32] Plans to re-start regular services to Sweden-only were then further hampered when BOAC lost one of its only two remaining 730-assigned aircraft, the Lockheed Electra 14, on 22 April 1940 in fog over Loch Lomond, whilst on a domestic courier flight from its base near Perth to Croydon.[33] This left the service with only a

24 Arthur Henson Narracott, *Unsung Heroes of the Air*, (London: F. Muller Ltd, 1943), p.33

25 Higham, p.15

26 A. W. Childs (Acting Chief, Automotive Division), "Foreign Market Surveys, Fourth Quarter, 1928", (Reports from American Representatives of the Foreign Consular Officers & Department of Commerce: Countries), *Daily Consular and Trade Reports*, (Washington, D.C.: Bureau of Foreign & Domestic Commerce, 26 March 1929) p.753

27 European Finance (Trade Reports Section), "Sweden" (no author stated), Vol. 13: (Ann Arbor (MI): University of Michigan, 1929), p.161

28 Leonard Beckmann (Ed.), *Exxon Air World*, Vol. VI, (New York: Exxon, 1952), p.143

29 "Stockholm den 2 September" (No author stated) (in Swedish) in *Industriell teknik* (transl.: *Industrial Technology*), Vol. 65, (Stockholm: Svenska uppfinnareföreningen : Tekniska läroverkens ingenjörsförbund (transl: Swedish Inventors' Association: The Swedish Association of Technical Educators, 1936), p.285

30 United Kingdom Civil Service, "Economic Conditions in Sweden", (London: produced and published by UK Department of Overseas Trade, 1939), p.82

31 Len Cacutt (Ed.), *The World's Greatest Aircraft*, (Guildford (UK): Colour Library Books, 1988), p.30

32 Charles Woodley, *BOAC: An Illustrated History*, (Cheltenham (UK): The History Press, 2004), p.20

33 *Accident description for G-AKFD at the Aviation Safety Network*: https://aviation-safety.net/database/record.php?id=19400422-0 (accessed 24 April 2021)

single aircraft.

Despite the sparsity of services to Bromma, BOAC did however, attempt to aid the British land forces operating in central Norway in May 1940, yet this was a costly failure and highlighted the great risks that future missions would take when flying unarmed aircraft close to hostile territory. Two BOAC Sunderland flying boats on temporary secondment to the RAF were sent overnight from Sumburgh Head in the Shetlands with supplies for the Allied Expeditionary Force (AEF) on 5-6 May.[34] Although the crews and some radio equipment intended for the British Army at Harstad was saved, both aircraft were attacked and destroyed by the Luftwaffe, whilst at anchor near Bodø.[35] The crews eventually made it to Sweden with assistance from the Norwegian military.[36]

The Scandinavian service hub had moved from Heston to Newlands airport at Scone, near Perth in October 1939.[37] Flights between Perth and Bromma were intermittent and occasional through the summer of 1940, using a single Lockheed Electra 14 aircraft with two aircrew and a supporting ground staff contingent from Britain, Norway and Poland.[38] The small aircraft had an excellent safety record[39] and was favoured by diplomats and statesmen for this reason and for its general reliability.[40] However, with capacity for only twelve passengers[41] and/or a small cargo of up to 5,000 lbs[42] (much of it usually mail in the early stages of the service[43]) it was well below the capacity needed by various government departments in Whitehall as well as by the British and Norwegian legations in Stockholm with the former[44], by this time being used by MI6 and SOE to gather vast amounts of intelligence on activity in German-controlled territory.[45] Yet there was little initial idea within the Air Ministry or the Norwegian authorities about how to expand the service, nor a particular appetite to do so in London whilst the moment of supreme decision for Britain was in the balance during the summer of 1940. Nevertheless, the fact that the service continued through the months of invasion threat, despite chronic RAF pilot shortages and the great need for transport aircraft both in Britain, North Africa and the Middle East, highlights the importance of its continuance, at least to the British and to some extent the importance Britain attached to its relations with Norway. The Norwegian merchant fleet was delivering critical supplies of aviation fuel to Britain during the summer of 1940.

By late 1940, although aircraft were becoming more plentiful, air crew remained in very short supply, despite the influx of pilots from outside Britain.[46] Over 1,500 RAF pilots had been killed in the Battle of Britain,[47] as well as some three hundred ground crew.[48] Against this background, BOAC's civilian service was not regarded as a high priority, despite growing recognition in Whitehall of its importance, evidenced in part by its hub being moved from Heston to sparsely populated rural Perthshire in the autumn of 1939.[49]

The Scandinavian service had already proven to be important to the intelligence community, particularly with the arrival of clear evidence of a Nazi rocket programme via the British embassy in Oslo in November 1939,[50]

34 John Evans, *The Sunderland Flying-boat Queen*, Vol. I, (Pembroke Dock (UK): Paterchurch, 1987), p.7
35 Imperial War Museum: Royal Air Force: Operations in Norway, April-June 1940: https://www.iwm.org.uk/collections/item/object/205183669 (accessed 30 March 2021)
36 Frederick Thomas Jane, *Jane's Fighting Aircraft of World War II*, (Teddington (UK): Crescent Books 1989), p.139
37 Captain Dacre Watson, "British Overseas Airways Corporation 1940 – 1950 and its Legacy", *Journal of Aeronautical History*, Paper No. 2013/03136, (London: Royal Aeronautical Society, 2013), p.8
38 Robin Higham, *Speedbird: The Complete History of BOAC*, (London: Taurus, 2013), p.29
39 René J. Francillon, Lockheed Aircraft Since 1913, (Annapolis (MD): Naval Institute Press, 1987), pp.137-8
40 David Owen, *Anti-Submarine Warfare: An Illustrated History*, (Barnsley: Seaforth, 2007), p.78
41 C. G. Grey & Leonard Bridgman, *Jane's All the World's Aircraft*, (London: Sampson Low, Marston & Company 1939), p.25
42 Rene J. Francillon, *Lockheed Aircraft since 1913*, p.87
43 Hodgson, p.39
44 Higham, *Speedbird*, pp.29-30
45 C. G. McKay, *From Information to Intrigue: Studies in Secret Service*, (Abingdon (UK): Routledge, 1993), p.179
46 Mitch Peeke, *1940: The Battles to Stop Hitler*, (Barnsley: Pen & Sword, 2015), p.15
47 Stephen Bungay, *The Most Dangerous Enemy: A History of the Battle of Britain*, (London: Aurum Press, 2000), p.368
48 "Battle of Britain, Royal Air Force", from: https://www.raf.mod.uk (accessed 01/05/21)
49 Watson, p.8
50 Karthick Nambi, "A 7-page report which saved millions of lives - The Oslo Report", *Lessons from History*, 27 May 2020 from: https://medium.com/lessons-from-history/a-7-page-report-which-saved-millions-of-lives-oslo-report-67697064d7c8 (accessed 2 May 2021)

yet recruiting staff continued to be a significant challenge in the light of demands for the service to be expanded by the British legation in Stockholm and the Norwegian government in London. Yet with the ongoing arrival of Norwegian air and ground crew in Britain, after escaping from Norway, whilst others completed their training in Ontario, in tandem with the receding danger of invasion at the end of 1940, a solution began to present itself. Negotiations began between the Norwegian, Swedish and British governments to establish a well-resourced, regular and frequent UK-Scandinavia air service, although there were many sticking points, not least the suitability of the Newlands BOAC base near Perth and where it might be moved to.

Newlands airfield had opened in 1936, under the control of RAF 51 Group, as an Elementary Flying Training School.[51] However, with the expansion of pilot training being an immediate priority from 1939, from that time on, there was little accommodation available at the airfield for civilian staff and that which was is described as: 'rudimentary and limited'.[52] The nearby city of Perth, some four miles to the south, was already overcrowded with billeted Royal and Merchant Navy crews[53]. Furthermore, the position of the base made for an uneconomic use of fuel as well as an added danger in having to fly over the often foggy Scottish Highlands in travelling to and from Stockholm. BOAC had already lost one of its precious few Route 730 aircraft in such conditions and air accidents were becoming more frequent as the skies became busier with inexperienced training pilots and expanding offensive, as well as defensive air operations against a background of deteriorating winter weather.

Regular and Expanding Services, 1941-44

With the availability of Norwegian crews who were experienced in the flying conditions of northern Europe and the growing importance of the service for economic as well as diplomatic and intelligence purposes, a new base was eventually established adjacent to RAF Leuchars on the east coast of Scotland in February 1941.[54] The service also received new aircraft, four Lockheed Lodestars in the spring of 1941, paid for by the Norwegian Government-in-Exile (NGE)[55] along with their Norwegian crews.[56]

The service steadily expanded over the following two years, in terms of numbers of aircraft assigned and a growing portfolio of cargo and passenger responsibilities,[57] but often faced repeated delays due to poor weather[58], lack of available aircraft[59] (often due to maintenance issues)[60] and became the subject of much antagonism between the British and Norwegian authorities at governmental level, particularly in regard to the limits placed upon the NGE's authority to negotiate for the purchase of US-built aircraft. After a series of heated arguments and complaints from the Norwegian Air Force Command, which had responsibility for the Norwegian BOAC crews, controls were steadily removed by the UK Foreign Office and Air Ministry, with the last limitations being abandoned in 1944.[61]

By 1943 there were some 17,000 Norwegian refugees in Stockholm[62], most of whom wished to travel to Britain, including

51 Andrew Self, "RAF Scone – Rudimentary but Very Important", *Aviation Trails*, 3 November 2019, https://aviationtrails.wordpress.com/2019/11/03/raf-scone-rudimentary-but-very-important/ (accessed 2 May 2021)

52 https://aviationtrails.wordpress.com/2019/11/03/raf-scone-rudimentary-but-very-important/ 3 November 2019 (accessed 2 May 2021)

53 William W. J. Knox, "A History of the Scottish People: the Scottish Educational System 1840-1940", p.7 from: https://www.scran.ac.uk › scotland › pdf (accessed 2 May 2021)

54 Camille Allaz, *History of Air Cargo and Airmail from the 18th Century*, (London: Christopher Foyle Publishing in association with The Air Cargo Association, 2005), p.163

55 Phil Butler & Dan Hagedorn, *Air Arsenal North America: Aircraft for the Allies 1938-1945: Purchases and Lend-lease*, (Shepperton (UK): Midland, 2004), p.23

56 Wilhelm Mohr, "The Contribution of the Norwegian Air Forces" in Patrick Salmon (Ed.), *Britain and Norway in the Second World War*, London: HMSO, 1995), p.95

57 "BOAC General Reports on Services", *Air Britain*: https://ab-ix.co.uk › pdfs › AMIL-BOAC-Gen-rep (accessed 23/04/21)

58 Robert J Laplander, *The True Story of the Wooden Horse*, (Barnsley: Pen & Sword, 2014), p.231

59 Edward Bishop, *The Mosquito: The Wooden Wonder* (New York: Ballantine Books, 1971), p.53

60 Philip Birtles, *Mosquito: A Pictorial History of the DH98,* (Coulsdon (UK): Jane's, 1980), p.97

61 *The Board of Trade Journal*, Vol. 151, Issue 2,520, (London: HMSO, December 1945), p.622

62 "News from Sweden", Vol. 94, (New York: American Swedish News Exchange, Inc., 1943), p.4

A V-2 rocket on a trellawagen, western Europe, 1944-5

With a speed of up to 3,500mph, a range of 200 miles and carrying a one ton explosive warhead, the V-2 had the potential to cause widespread death and destruction in Britain, France and the Low Countries, as well as disruption to the preparations for, and execution of Operation Overlord.

many who wished to join the Norwegian armed forces in the UK.[63] From a Norwegian point of view, both in Britain and Sweden, this was the priority, yet for British authorities a multitude of new priorities were developing as well as the expansion of its existing ones, the most important one becoming the carriage of steel ball bearings and other finished steel goods for the British aircraft manufacturing industry.[64]

Various commercial agreements were eventually reached and adjusted from time to time between the Norwegian and British governments between 1942 and early 1944, so that the service was essentially spilt into two – one crewed and paid for by the NGE, the other by the British, with each deciding its own priorities concerning carriage and the British paying the NGE for space they wanted for cargo or passengers on Norwegian-owned BOAC aircraft.[65] However, officials from the War Ministry would monitor all incoming and outgoing cargoes and could commandeer Norwegian-crewed and owned aircraft for British priorities, provided the Norwegian government was compensated for use of their aircraft. This practice became increasingly common as the British need for steel bearings became ever greater in 1943.

Between 1943 and 1945, BOAC transported some five and a half thousand tons of steel ball-bearings from Sweden to the UK,[66] whereas seaborne imports of ball-bearings from Sweden to Britain were intermittent and required highly dangerous journeys which amounted primarily to a handful of shipping operations, carried out months apart, by flotillas of three or four small armed merchant ships at a time, such as the MS Gay Viking (usually able to carry no more than forty or fifty tons of cargo[67]) which brought several hundred tons

63 "News of Norway", Vol. 2, (Embassy of Norway: Washington, D.C., 1943), p.108

64 Malcolm Fife, *Scottish Aerodromes of the 1920s and 1930s*, (Brimscombe (UK): Fonthill Media, 2020), p.118

65 Mohr in Salmon (Ed.), p.95

66 Eric B. Golson, "Did Swedish ball bearings keep the Second World War going? Re-evaluating neutral Sweden's role", *Scandinavian Economic History Review*, Vol.60, Issue 2; (Germantown (NY): Taylor & Francis, 2012), p.69, from: https://www.tandfonline.com/doi/abs/10.1080/03585522.2012.693259 (accessed 28 April 2021)

67 Richard Carr, "The Blockade Runners", *Richard Carr's Paxman History Pages*, (Colchester (UK): Davey, Paxman &

of bearings to the UK over the same two year period. The total amount of ball-bearings imported by air and sea combined, amounted to 31% of Britain's supply,[68] the greatest proportion of which was by air.

The transit of steel bearings and ball-bearings in particular from Sweden to Britain was of great importance to the British aircraft industry. By 1942, such was the shortage of bearings that hundreds of Lancaster bombers as well as other aircraft types were laying in fields next to the factories, incomplete because of the shortages.[69] Furthermore, the Swedes were being placed under increasing pressure to end or reduce their equivalent trade with Germany in favour of the Allies.[70] However, if the Allies were without the means to transport the bearings, the agreements reached with the Swedes to limit the trade with Germany, whilst increasing it with the Allies became largely worthless. Furthermore, German pressure was being placed upon the Swedes and not only through diplomatic means, but also with military threats as well as directly against the 730 service. Through 1943 and '44, BOAC lost eight aircraft, six of them to probable shoot downs from German aircraft and ground fire, as well as ten air crew and eighteen passengers.[71]

By 1944, the critical bearings shortages were being overcome, yet there was still a great urgency to out-purchase and out-transport the bearings being acquired by Germany, which was able to use sea transport over a short German-controlled sea lane of only about one hundred miles. The journey from Stockholm to Leuchars was some eight hundred miles.

After much negotiation between the British and Swedish governments, in October agreement was reached with Stockholm to end its export trade altogether with Germany[72], allowing the Allies to import the remaining stocks not required for Swedish domestic industry. The price included large increases in rubber and oil exports from the US and Britain to Sweden,[73] as well as defence materiel, including advanced aerial radar equipment; one such apparatus was installed by the British Army on the Swedish island of Öland in the southern Baltic in October 1944, from where incoming missiles and other aircraft could be detected.[74] Both the British Army technical staff and the equipment were flown to Sweden by BOAC.[75] This was a serious breach of Sweden's neutrality, carried out entirely at Stockholm's request and with its co-operation and demonstrates the importance to the Allies of stopping the bearing export trade with Germany and also that BOAC was able to provide a means by which Sweden's price for its full co-operation could be met. The consequent shortage in Germany delayed developments of new aircraft in particular, which had threatened to do great damage and delay, or even halt Allied progress toward defeating Nazi Germany.[76]

Advanced Weapons Intelligence

Clandestine Allied operations in northern Europe, supported by BOAC were, in some cases, arguably, even more important to the Allies than the aforementioned trade arrangements. MI6 had learned a great deal about German weapons plans and testing through its base in Stockholm: spoken and written accounts, sketches, photographs and technical parts of such weapons, most notably the V-2 rocket being developed at Peenemunde on the

Co of Colchester, 19 December 2020), from: https://www.paxmanhistory.org.uk/sitemap.htm (accessed 26 April 2021)

68 Golson, p.3

69 Thomas J. Griffith , *An Application Of The Principles Of War To The Schweinfurt Raids On 17 August 1943 and 14 October 1943*, (Lucknow: Lucknow Books, 2014), p.128

70 William Z. Slany, "U.S. Interagency Report on U.S. and Allied Wartime and Post Post-war Relations and Negotiations with Argentina, Portugal, Spain, Sweden, and Turkey on Looted Gold and German External Assets" in *American University International Law Review*, Vol. XIV, Issue 1, Article 8, (Washington D.C.: American International Law Review, 1998), p.xliii, from: https://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1302&context=auilr (accessed 26 April 2021)

71 Higham, pp.29-30

72 Alf W. Johansson & Torbjorn Norman, "The Swedish Policy of Neutrality in Historical Perspective" in International Review of Military History, (Leiden (Netherlands): Brill, 1984), p.112

73 H.R. 3662, U.S. Holocaust Assets Commission Act of 1998 (Washington D.C.: United States Congress & Committee on Banking and Financial Services, 1998), p.112

74 Poul Grooss, *The Naval War in the Baltic, 1939–1945*, (Barnsley (UK): Pen & Sword, 2017), p.220

75 "British signal reconnaissance from Ottenby on Öland during the years 1944 and 1945", from: http://www.signalspaning.se/ottenby/index.html (accessed 25 March 2021)

76 R.G.S. Bidwell, "An Approach to Military History" in *Military Review*, , Vol. 29, Issue 6; (Fort Leavenworth (KS): U.S. Command & General Staff College, 1949), p.107

A Norwegian BOAC Lockheed Lodestar at Leuchars, c.1943

Four Lockheed Model 18 Lodestars were the mainstay of the Norwegian crewed element of the Scandinavian service until early 1943. They were replaced by larger aircraft as the facilities at both Leuchars and Bromma were enlarged.

north German coast, had all passed through the British embassy on their way to Britain via BOAC from across northern Europe.[77] Consequently, from 1942 the Allied intelligence picture of the development of the V-2 ballistic missile, previously hazy at best, despite the 1939 Oslo Report reaching Britain via BOAC in 1939, became much clearer. Polish agents provided sketches of the Peenemunde site[78], Danish agents sent undeveloped photographic film[79] and Norwegian, German and Austrian agents provided regular updates on technical and scientific developments.[80][81][82] Much of this information came to the Assistant Directorate of Intelligence (Science) (ADI Sci.), a division of MI6, via BOAC from Stockholm[83] and was further augmented and confirmed as accurate by intelligence from Allied agents in France[84]and the Low Countries, some of whom had worked at Peenemunde and its attendant facilities.[85]

The Nazi nuclear weapons programme was also a major concern and the level of progress made was unknown to the Allies until the end of the war. In February 1943, a Norwegian SOE team had successfully destroyed much of the production facilities at a Nazi-controlled Norsk Hydro fertiliser plant in the Telemark region of Norway, which was producing Deuterium Oxide or "Heavy Water", an important element, required for the programme.[86] All of the team survived, with those members who had been ordered to escape into Sweden all successfully doing so, after which they were swiftly transported back to Britain on board a Norwegian-crewed BOAC Lodestar[87], and were thus able to brief MI6 on the situation and advise on further actions. The importance of getting the team to Britain quickly was not only important

77 Ben Wheatley, *British Intelligence and Hitler's Empire in the Soviet Union,* (London: Bloomsbury, 2017, p.86

78 Jerzy B. Cynk, *The Polish Air Force at War: 1943-1945,* (Official History, Vol. II) (Atglen (PN): Schiffer Military History, 1998), p.468

79 Keith Jeffery, *MI6: The History of the Secret Intelligence Service 1909-1949*, (London: Bloomsbury, 2010), p.513

80 Ulf Uttersrud, "Etterretningsoffiser og militær organisator" (transl. from Norwegian: "Intelligence officers and Military Organisation"); (Oslo University College: 15 November 2007), from: https://web.archive.org/web/20071115011516/http://www.iu.hio.no/~ulfu/historie/tronstad/krigen.html (accessed 23 April 2021)

81 R.V. Jones, *Air Scientific Intelligence Report No. 7*: "The Edda Revisited", 17 July 1940, Churchill Archives Centre, Cambridge University, Reginald Victor Jones Papers, RVJO B.24

82 Philip Ball, *Serving the Reich: The Struggle for the Soul of Physics under Hitler*, (University of Chicago Press: 2014), p.138

83 Winston Ramsey "The V-Weapons: Then and Now" in *After the Battle*, Issue 6, (Old Harlow (UK): Battle of Britain International Ltd, 1977), p.19

84 Martyn Cornick & Peter Morris, *The French Secret Services*, (Santa Barbara (CA): ABC-Clio, 1993), p.66

85 Graeme Cook, *Missions Most Secret*, (Blandford: Harwood-Smart, 1976), p.101

86 Margaret Gowing, *Britain and Atomic Energy, 1939-1947*, (New York: St Martin's Press, 1964), p.229

87 Oliver, p.218

from MI6's point of view. The men's personal safety was in jeopardy whilst they remained in Sweden because of the presence of Abwehr and undercover Gestapo agents in the country. Their capture could also have endangered their colleagues who had remained in Norway and other operatives. Furthermore, Sweden itself was still under threat of attack by Nazi Germany if it did not comply with Hitler's wishes. The evacuation of the team would not be the only time BOAC provided somewhat dramatic proof of its importance to the Allies.

The Danish nuclear physicist, Nils Bohr was smuggled out of Denmark ahead of the imposition of martial law in the country on 6 October 1943 and was immediately taken to Britain in the bomb-bay of a BOAC Mosquito.[88] The Danish resistance had learned that his arrest was imminent,[89] after which it was presumed that he would be forced to work for the Nazi nuclear weapons programme. Bohr had successfully identified the chemical compound, Vanadium 235:[90] 'a vital ingredient of what became the nuclear fission atomic bomb.' [91] His considerable contribution to the Manhattan project is unquestioned.[92]

By mid-1943 the Allied intelligence picture on the V-2 which, it was presumed would carry a nuclear warhead once the latter was manufactured, had developed to the point where both Churchill and the head of RAF Bomber Command, Air Chief Marshal Arthur Harris were persuaded to sanction a major raid on the main Nazi rocket development site at Peenemunde on the Baltic island of Usedom on 17-18 August. The raid resulted in the rocket programme being set back by about three months.[93] This amount of time might seem unworthy of the effort at first glance, in particular in view of the loss of life involved – over two hundred RAF aircrew[94] and at least five hundred slave labourers, yet only a handful of rocket engineers and scientists were killed.[95] Whether it was or not a price worth paying is not adjudged here, however the delay in development meant that the V-2 was not ready for deployment prior to D-Day. Had it been, it could have been used to cause great damage and disruption to preparations for Operation Overlord on the south coast of England and to the Normandy invasion itself.

The most significant intelligence coup regarding rocket intelligence resulted from the apparently accidental crash of a test fired V-2 missile (partly intact) in southern Sweden on 13 June 1944.[96] MI6 swiftly learned of the crash and successfully negotiated with the Swedes for their intelligence findings on the rockets and for the rocket itself to be transported to Britain[97] where most of its significant features were established or confirmed by Dr R. V. Jones of ADI (Sci.).[98]

BOAC provided the transport for the British intelligence officers, who carried out their own investigation in Sweden, and the means by which they were brought back to Britain with key parts of the rocket in mid-July.[99] BOAC also negotiated with the USAAF for the use of an American civilian aircraft that then brought back the fuselage of the rocket at the end of the month. [100] The C-47 Skytrain aircraft used for the mission was made up of British and Norwegian BOAC crew as well as US service personnel, including Colonel Bernt Balchen, who commanded the mission and piloted the aircraft.[101] Balchen was a Norwegian-American with a great wealth of flying experience in Nordic climates, including having a number of pioneering aviation successes to his name. His selection for the mission goes some way in demonstrating the importance of its success.

Dr Jones at ADI was able to provide a full

88 Patrick Delaforce, *The Fourth Reich and Operation Eclipse*, (Stroud (UK): Fonthill, 2015), p.282
89 Joseph I. Lieberman, *The Scorpion and the Tarantula: The Struggle to Control Atomic Weapons, 1945-49*, (Boston, MA: Houghton Mifflin, 1970), p.17
90 Delaforce, p.282
91 Delaforce, p.282
92 Herman Feshbach & Tetsuo Matsu (Eds.), *Niels Bohr: Physics and the World*, (Abingdon: Routledge, 2016), p.362
93 Martin Middlebrook, *The Peenemunde Raid*, (London: Penguin, 1998), p.222
94 Middlebrook, p.210
95 Middlebrook, pp. 243–244
96 Michael J. Neufeld, *The Rocket and the Reich: Peenemunde and the Coming of the Ballistic Missile Era*, (Washington, D.C.: Smithsonian, 2013), p.237
97 William B. Breuer, *Race to the Moon: America's Duel with the Soviets*, (Westport (CT): Praeger, 1993), p.48
98 Dieter K. Huzel, *Peenemünde to Canaveral*, (Englewood Cliffs (NJ): Prentice Hall, 1960), p. 93
99 R.V. Jones, *Most Secret War*, (London: Penguin, 1978), pp.231-2
100 William Raymond Loomis, *Fighting Firsts*, (Guildford (UK): Vantage, 1958), p.268
101 Clayton Knight & Robert C. Durham, *Hitch Your Wagon: The Story of Bernt Balchen*, (Baltimore, MD: Bell Publishing Company, 1950), p.294

and highly accurate report on the rocket and its capabilities by 26 August 1944.[102] This and his interim reports, the first of which was sent to the Cabinet on 7 July,[103] allowed the government and military in Britain important time to prepare for offensive operations against the rocket and for the defence of the civilian population who were to be targeted by it.[104] The barrage began on 8 September,[105] by which time new, deep shelters[106] and protection from flooding in the event of a strike on the embankments of the Thames had been constructed[107], with many civilians also evacuated to the countryside.[108]

A great effort was then also made to capture the remaining German agents in Britain and turn them to working against Nazi Germany.[109] With the alternative of being shot, most complied, feeding false information on where impacts of rockets hitting Britain had taken place, leading to rocket trajectories being misdirected from their intended targets so that in total, of those targeted at London, the majority fell into the Thames Estuary or in the countryside around London.[110]

Knowledge of the range of the rocket, provided by ADI's analysis of the Bäckebo version (c. two hundred miles) also allowed for greater and swifter accuracy in locating launch sites, fuel depots and the supply convoys that serviced them.[111] The successes of the Allied air attacks on these targets were limited in their effectiveness, yet both the military and civil defence actions taken would not have been carried out as early, nor been as effective, had a physical example of the rocket not been investigated and brought to Britain. Abwehr were aware of the capture of the rocket by the British and attempts by both the German intelligence agencies and the Luftwaffe to end the Scandinavian service by tracking and destroying its aircraft whilst in international air space were stepped up from the summer of 1944.

Counter-Measures

The types of aircraft chosen for 730 became ever more important as a result of increasing interception attempts after the Bäckebo incident. As well as often flying close to their full range, weather conditions were often dangerous – ice and wind were the greatest dangers in winter and in summer the long daylight hours and good visibility made the aircraft vulnerable, both to interception or anti-aircraft fire. Furthermore, it emerged in December 1945, that Abwehr agents working at Bromma had informed the Luftwaffe of every wartime flight departing Bromma from late 1941.[112]

Abwehr appear to have lacked knowledge of the purpose of the BOAC flights to and from Bromma until early 1941; they may also have regarded them as non-threatening because they were so few in number. However, as Abwehr increased it presence at Bromma through 1941, the value of the flights and the advantages for Berlin in stopping them became increasingly apparent. This resulted in

102 Churchill Archives Centre, University of Cambridge: *Papers and correspondence of Reginald Victor Jones 1911-1997* (Archive Collection): Reference: GB 14 RVJO: R.V. Jones, Report for War Cabinet & Joint Chiefs of Staff Committee 26 August 1944, pp.1-5, from: https://archiveshub.jisc.ac.uk/data/gb14-rvjo (accessed 21 June 2019)

103 Churchill Archives Centre, University of Cambridge: Papers and correspondence of Reginald Victor Jones 1911-1997 (Archive Collection) Reference: GB 14 RVJO: Report for War Cabinet & Joint Chiefs of Staff Committee 7 July 1944, (presented 8 July 1944), pp.1-2, from: https://archiveshub.jisc.ac.uk/data/gb14-rvjo (accessed 21 June 2019)

104 Martin Gilbert, *Road to Victory: Winston S. Churchill 1941-1945*, (Kibworth (UK): Guild Publishing, 1989), p.969

105 J.L. Hillard, "Military Thinking" in *Military Review*, Vol. 48; (Fort Leavenworth (KS): U.S. Army Command & General Staff College, November 1968), p.91

106 David Bownes, Chris Nix & Siddy, *Holloway Hidden London: Discovering the Forgotten Underground*, (London: Yale University Press, 2019), p.33

107 "Clapham South Deep Tube Shelter and Surface – Building at Wandsworth Entrance, Balham Hill", produced by Historic England, (London: Historic England, 22 October 1998), from: https://historicengland.org.uk › the-list › list-entry, (accessed 21 April 2021)

108 Arthur Salusbury MacNalty, (UK Government Report): "The Civilian Health and Medical Services: The Ministry of Health Services; other Civilian Health and Medical Services; The Colonies; The Medical Services of the Ministry of Pensions; Public Health in Scotland. Public health in Northern Ireland", (Vol. II); (London: HMSO, 1953), p.259

109 Frederick Ordway I & III & Mitchell R. Sharpe, *The Rocket Team*, (New York: Thomas Y. Crowell, 1979), pp.467-468

110 R. V. Jones, *Most Secret War*, p.458

111 The National Archive (UK): *Directorate of Intelligence (AIR 40/1-2467)*, (published compilation of reports and correspondence relating to UK air intelligence operations and associated agencies in period 1943-45): (London: Public Record Office, 1984), p.168

112 C. G. McKay, From Information to Intrigue: Studies in Secret Service, (Abingdon (UK): Routledge, 1993) p.279

A BOAC DeHavilland DH.98 Mosquito at Leuchars, c.1943

For a time, the Mosquito was the fastest operational aircraft in the world and formed the core of the BOAC Scandinavian service from 1943 to 1945. Eventually, twelve of these much-in-demand aircraft flew on the Scandinavian service, demonstrating how important it had become to the Allied cause.

the German legation threatening the Swedish government in 1941 that the Luftwaffe would shoot down BOAC aircraft if the Swedes allowed flights to continue.[113] Stockholm chose to largely ignore the threat, although tight restrictions on the number of flights remained in place until 1943. Furthermore, until 1942 Bromma was the only airport open to BOAC flights, with a strict flight path designated by the Swedish civil aviation authority. However, the fact that no aircraft were lost to shoot downs until 1943, suggests that prior to this, the Luftwaffe did not have enough sound intelligence on BOAC aircraft flight paths after they had left Swedish airspace, nor the capability to identify them accurately on radar. This would change definitively in late 1943.

As the threat to BOAC's operations became more apparent, the nature of the aircraft used by the service changed, whilst the determination of the Luftwaffe command to stop them continued to become more manifest. German development of advanced radar tracking and the deployment of faster and more agile aircraft to the southern Baltic region presented an ever greater threat, yet as BOAC's on board technology improved, the dangers were mitigated. However, by early 1944, only the fast DeHavilland Mosquitoes were permitted to fly the southern route through the Skagerrak, with all other aircraft diverted to the northern route which passed over central Norway.

By the end of the war, BOAC had lost eight aircraft, at least four of which were due to enemy interception, with three others probably due to this cause. The Focke-Wulf 190 fighter is thought to have been the most likely successful interceptor in most cases, although the presence of Me109 fighters in the region and a small number of Me262 jets stationed in eastern Denmark creates the possibility that they may have also have been responsible for some losses. The presence of floating anti-aircraft platforms in the Skagerrak added further to the perils faced by the BOAC pilots.

Conclusion

The BOAC Scandinavian Service, which ran between 1939 and 1945, provided an international civilian air service crewed by Norwegian and British personnel throughout the Second World War. The service proved to be of importance to the Allied cause in terms of diplomacy, war industries and intelligence. It operated successfully, due to the close co-operation between

113 Denis George Richards & Hilary Aidan St. George Saunders, *Royal Air Force Official History): The Fight is Won*, (London: HMSO, 1953), p.188

the UK and Norwegian governments and various departments within both administrations in facilitating it and ensuring its continuance against the great challenges of the Luftwaffe, the Nordic weather and the demands of the RAF for both aircraft and staff. The growing co-operation of Stockholm in allowing expansion of flight numbers after 1940 was also of great importance.

The roots of the service lay in attempts during the early inter-war period by both the British, Norwegian and other Nordic governments to establish regular mail and passenger services across the Baltic and North Seas and also partly for the purpose of competing with the development of such services between Germany and Scandinavia in the same period.

Regular UK-Scandinavia passenger services were added to existing mail services in 1936, thus creating greater scope for a diplomatic and intelligence air conduit. With this partly in mind, BOAC was established by Act of Parliament in early 1939, resulting in the merging of the two main UK couriers, after which the new publically company operated primarily as a diplomatic and intelligence route for the next two years, albeit intermittently.

The Norwegian contribution to the staffing of the service began at the end of 1940 when a chronic shortage of pilots in Britain was somewhat ameliorated by the first graduating aircrew from the RAF training base in Ontario, Canada, known as "Little Norway", some of which were seconded to BOAC's service because of their knowledge and experience of flying in Nordic weather.

By 1943 Norwegians made up half the service's air crew from a total complement of around one hundred. Increasing numbers of ground crew and signals staff added further to BOAC's Norwegian contingent thus easing the severity of the staff shortages the company continued to face. However, the leadership of the service, particularly at political level was not always amicable; the differing priorities of the Norwegian and British governments led to complaints from the Norwegian Air Force Command that despite their paying for many of the aircraft and providing half of the air crew, the priorities of the Norwegian government - firstly that of transporting refugees to Britain and secondly, diplomatic carriage, were often ignored. There were also concerns over the level of control the Air Ministry exerted over the Norwegian Purchasing Board (an agency of the NGE) as it negotiated for the buying of aircraft from the United States. However, most of these disputes had been resolved by early 1944, although only after interventions by Churchill and King Haakon VII.

Arguably, the single most important part of the service's responsibilities was the transport of steel ball bearings (produced by SKF) to Britain from Sweden. Not only did this provide a regular supply to British war industries, which was not possible by sea, but also denied the equally vital supplies to Hitler, thus making production of new and advanced weapons for the Third Reich far more difficult than would otherwise have been the case.

Intelligence was also of great importance, particularly in relation to Milorg operations in Norway and to SOE and MI6 activity in relation to the development of ballistic missiles by Nazi Germany. The transport of physical intelligence and agents to Britain, particularly the Bäckebo rocket, enabled the Allies to develop countermeasures against such weapons which had threatened to devastate cities in Britain, France and the Low Countries, as well as to further disrupt Allied preparations for the invasion of, and operations in Normandy in 1944.

The BOAC Scandinavian service came to encompass a series of major responsibilities for the Allies across a number of fields. It developed from being a small, tenuous and much neglected courier service in 1939-40, to become a broad and comprehensive air operation with responsibilities across a wide spectrum of Allied interests, including trade, intelligence, propaganda and humanitarian aid. It is an early example of the importance and success of a multi-national civilian air transport service being deployed to help facilitate the fulfilment of multiple nations' economic, diplomatic and intelligence aims, as well as individual national priorities.

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Front picture: The opening ceremony for Stockholm-Bromma Airport (July 1936). The new airport replaced a small boat plane station and was one of the few European airports with a concrete runway. During the course of the Second World War it would become of central importance to the Allies as a way of transporting industrial materials out of Sweden and as a conduit for many clandestine operations.
Source: SVT Nyheter – "Se närKung Gustaf V inviger Bromma flygfält 1936", 18 January 2021: https://www.svt.se/nyheter/lokalt/stockholm/se-nar-kung-gustav-v-inviger-bromma-flygfalt-1936 (accessed 21 March 2021)

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Picture page 4:
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Picture page 9:
Source: https://rarehistoricalphotos.com/v2-rocket-in-pictures/ (accessed 23 April 2021)

Picture page 11:
Source: Photo ref: Lockheed Lodestar L-18/C-59/R5O - США – 1939; from N. Mathisrud – "The Other Stockholm Run": http://aviadejavu.ru/Site/Arts/Art9910.htm (accessed 28 April 2020)

Picture page 14:
Source: BAE Systems: https://www.baesystems.com/en/heritage/de-havilland-mosquito (accessed 25 April 2021)